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HORTICULTURIST,

AND

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THE SOUTHERN AGRICULTURIST.

(NEW SERIES.)

Vol. III. FOR FEBRUARY, 1843. No. 2.

For the Southern Agriculturist.

AN ADDRESS DELIVERED BEFORE THE ST. ANDREW'S ASHLEY AND STONO AGRICULTURAL ASSOCIATION, JULY 1842.

BY JOHN S. BRISBANE, PRESIDENT.

GENTLEMEN:—You have appointed me President of your Society, for which I thank you. It indicates a confidence which I shall endeavor to merit by my attention to its duties.

We have organised this association for the purpose of promoting our agricultural interests, under the conviction, that at its present price, cotton does not afford a sufficient remuneration for our labor. We must, therefore, increase by superior culture, the quantity we make, or turn our attention to something else. In either case, the means we have adopted are best calculated to attain the object proposed. By association, we not only may communicate any improvement made individually, but we excite a disposition to have something worth communicating, and arouse into action those dormant powers of investigation which otherwise would remain in torpidity. Who has not felt himself stimulated to exertion by the desire of gaining the applause of his neighbors, and make experiments which he would not have done, but for the hope of their approbation, and it is by experiments that we must arrive at improvement. To follow the beaten tract may do very well on the flow of the tide of prosperity, but on its ebb, when we may be thrown on the shoals of want, it requires all our ingenuity to find out where to steer, to avoid them. When cotton sold high, it was easy enough to sail along with the current; but, at its present price,

we must exert ourselves to discover the ways and means, not of living only, but enjoying life. Prosperity has made us fastidious; the potato and cabbage which satisfied our forefathers, will not satisfy us; we must have our salsify and cauliflower.

There is an advantage which we have availed ourselves of, the appointment of a committee of inspection. They will not wait for improvements to be pointed out to them, but will, being practical planters themselves, see the different modes of culture with their relative merits, and compare one with another, and report not only the facts, but their opinions of them, and give us an opportunity of reflecting upon both. The Chairman of our board of inspection, (from whose energy by the by, I expect much,) says, there will be another advantage arising from their visits which I scarcely dare to mention, it is, that the fear of shame of being held up to view as negligent planters, will stimulate to exertions, which otherwise would not have been made. We have the experience of our Island brothers who adopted this mode. On a similar occasion, I some time since pointed out the advantages to a different Society, having just before had the pleasure of hearing a very full and able report from their Chairman of inspection, Dr. Legare. We must at any rate gain one advantage, an improvement of our social intercourse, which you will agree with me requires it.

I think we shall find that a revolution in our agricultural pursuits will become necessary, and I do not know that ultimately we will be the worse for it. When we were making a great deal of money by cotton, and boasting every year of the increase of our slaves by purchases, it is a question with me, whether we really enjoyed more of the good things, which heaven in its benevolence had placed within our reach, than we might do at the present time with our present means, and a *little more exertion*. I recollect spending a night with a friend at the South, who in the course of the evening boasted much of the number of bales made that season, probably some hundreds, as I knew they owned some hundred of slaves and planted lands of the first quality. Upon a slight absence from the room, an excuse was thought necessary. It was to *measure* out some corn for my horses. At another time, I staid an evening with one of the same family, and equally rich. After setting out in the morning, my servant informed me, that my horses had not been

fed at all, but with a little fodder, and I had to ride for many miles before I got through their extensive possessions, (as I did not wish to buy of his own slaves,) before I could get any corn. So much for the comforts—now for the ostentation of the day. Mr. Robert Barnwell, the elder, who among many wise things, often said many good ones, mentioned that one of his neighbors had been to town and bought some article of furniture so large, that it could not be got into his house, and if it had, it could not be put up without making a hole through the ceiling. These anecdotes, however trivial in themselves, show that money made easily, contributes little to our real happiness and is spent more for ostentation to excite the admiration of others, than for our own enjoyment. Now, I prefer seeing provisions in that abundant state, that a neighbor of mine had, who was remarkable for the number of animals he had about him, both feathered and four legged. Upon a friend inquiring how much corn he gave them daily, his answer was, that he gave them but a quart; seeing that he excited some suspicion of his accuracy, he continued, a quart of corn is placed every morning in the piazza which I take into the yard and scatter about. If the poultry, &c. eat it greedily, I know they have not been sufficiently fed, and woe betide the person whose business it is to feed them; but if they pick at and pass over it, I am satisfied that they had enough; and I will rejoice when we can do the same, and be in a situation to do it.

The science of agriculture has arrived at that state, that we know the earth, properly so called, does nothing more than keep the vegetable, whether tree or plant, in its erect position, as the atmosphere does animals, or the water, fish. It is the extensive matter which is intermixed with it, that affords nourishment to every vegetable. If it be not there by the powers of nature, or has been exhausted by our culture, it must be replenished by ourselves, or the plants suffer. Further, the plants suffer if it be there and they cannot get it, which is obtained through tillage. Thus, the system is reduced to its most simple elements, to give to every plant enough of that which will nourish it, and to enable it to help itself, and in proportion to the quantity of food congenial to its nature, and the means of assimilation afforded it by loosening the soil in order to enable its roots to penetrate it, will be your profit'

So that manure and tillage is all that is required in our happy climate, to enable us to enjoy whatever may conduce to our reasonable gratification. If the cotton plant by the reduction in its price cannot afford this, let us turn our attention to something that will. Those who have good rice-land may not be at a loss; though it may not be directly as profitable in the amount of sales, as cotton was, it will remunerate your labor either as food or manure.—There is no part of it but what is valuable. Its cultivation has other advantages, as it does not require the same land as provisions, which cotton did, you might plant your best high land in grain, and make enough of that indispensable article which we hitherto have thought proper to buy to our great loss. It does not require a change of fields so often as cotton, irrigation renovating it through the winter as much as the crop exhausts through the summer. It is matured with less labor and harvested with more facility than cotton.

But every one has not rice-lands, we will therefore see what else might be done. I recollect to have heard when indigo was generally cultivated, that Captain Chesnut, of Kershaw district, made his large fortune by getting for his, eighty cents, when others could get but fifty, from its superior quality, which he gave it by making use of a better mode of manufacturing it. I believe the East-India indigo sells from one dollar to one dollar fifty cents per pound, which arises from their superior mode of extracting the dye from the plant. Some years siece, a gentleman of New-York let me know through Mr. Horry, then Corresponding Secretary to the Agricultural Society of Charleston, that if I would guarantee the delivery of so many weight of the dried leaves of indigo packed up as cotton, I presume not so hard, he would be at the expense of establishing a machine which should make a dye equally, at least, as good as that from the East-Indies, and that it was an article in great demand at all the Northern manufactories. Not being sufficiently interested at the time, I took no step in the business beyond procuring some seed which I neglected. I shall pursue the subject probably. Now, if a living could be made at fifty cents, and a fortune at eighty, and the probability that above one hundred could be obtained now, without the extremely disagreeable process of extracting the dye from the plant, which was done in August and

September, and which might be done at the North, or in the winter, I think it an object worth attention and minute inquiry. Again, a proposition has been made to Lord Ashburton, to exert his influence upon his return to England, to have maize (our corn) introduced there at a low duty, as a cheap food for their manufacturers. What a demand for that article would arise if the proposition be adopted! Hitherto, we have imported it, calculating that it was better to turn our attention to cotton and rice as more valuable articles. There was some plausibility in this calculation, considering the small quantity we make to the acre; but as I have already said, the quantity we make is proportionate to the manure and tillage bestowed. Our brother Islanders know that they make above double what they made before they introduced manure, and they have set us an example worthy of all praise. I have known above fifty bushels of corn made; a large quantity of manure was used, bnt very bad tillage. Now, I do aver that we do not know how much our lands are capable of producing, as we have never tested it by fair trials. Who thought a few years past, that we should ever go to Columbia between breakfast and dinner? More appropriate—who thought that we should export thousands of bushels of potatoes to the North as we have done this year; and who will say that we may not export thousands of bushels of corn to Britain in a few years.

It is generally supposed that our lands cannot produce as much corn as more northern climes, as it runs too much to stalk if highly manured. Manure is a very comprehensive term, we must be more explicit, some is calculated to produce viviparous and others oviparous shoots; what was used was probably of the former. In some the carbon predominates, in others the nitrogen. It is necessary that the humus or geine used, be congenial to the plant, and can be assimilated by its spongelets, otherwise it is not a fair test. I have seen as fine eared corn on the Savannah river as on the Santee, and think with the same care in the selection of seed we might make as much corn as they make at the North. We have all the materials for making compost which they have, and some peculiar to ourselves. From our peninsulated state almost every plantation can command salt mud, marsh and rush, and every one pond mud, leaves, and pine trash. We can afford to keep four

head of animals to their one, as ours feed themselves principally, and they must feed theirs seven months; but acknowledging that their one makes as much manure as our four from being shut up, we are their equal. Then, in the process of tillage, we must allow their superiority. They plough, harrow, and roll, steep their seed in stimulants, and push it forward by every possible means. I leave it to yourselves to say what is our course? We will now see what we can do by that article our flint-corn. It sells and will sell as long as cotton is planted at from seventy five to one hundred cents per bushel. A man can tend thirty acres with a plough, we will allow two; a friend of mine makes 5,000 bushels, annually, from 150 acres, manured principally with vegetable matter, (the offals of his rice) that is nearly 35 bushels per acre, we will allow 25: you will find that amounts to 750 bushels for two hands, which at the lowest price, amounts to $562. That is not so bad considering we have all the peas and blades to pay expenses; I therefore think our situation by no means desperate, nor that there is a necessity for leaving our old haunts and friends.

In a report to some society, I believe Gen. Hammond says, that we cannot make 7 per cent. upon our capital, if cotton sells at less than ten cents; by which he seems to imply that we require 7 per cent. to live comfortably. That might be the case if we all lived upon annuities; but we live upon our plantations, which, if properly managed, provide us with almost every requisite of food, but the liquid part, and as we have not yet become temperance men, that certainly is a high item, including tea, coffee, &c. Now, when we have the solids found us at home, we can afford to purchase the liquids at considerably less than seven per cent. But I do contend that we can make more in St. Andrew's than that, by care and exertion. It cannot be too strongly impressed upon the mind, that whatever you put into the ground, whether it be tree, shrub, grain, or root, there must be a sufficient quantity of geine to bring it to perfection; and that it be brought to a proper state of tilth to enable its roots to assimilate the ammonia. We may not be able to make as much as Mr. Young of Kentucky makes, that is 100 bushels to the acre, but he gets 12½ cents for his, and we 75, which is more than equivalent to the difference of production. We need not fear the want of a market. Why should not

St. Andrew's supply the Santee rice planters as well as North-Carolina? There, alone, will be a market for many years for all we can make.

Again, Dr. Thomson of Delaware, recently sent to Philadelphia, samples of sugar made from the cornstalk by Mr. Webb, which was superior to any made from the beet, and manufactured by a more simple process. Here is another means of using our surplus, which gives us purer sugar, better molasses, and the offal for our stock, in a state that it might be kept all the winter. Now, though the quantity made be much less than from the sugar cane, it is a surer crop, and we may begin the manufacture much earlier in the season, and insure the whole; which we know is not the case with the other—the planters of which, not making one full crop in three.

There is another article to which we give less attention than it merits, our sweet potato. I think we might supply all the West-Indies with them, as our climate allows of their being shipped all the winter, as a return cargo for their fruit, coffee, &c. At any rate we might make many more than we do for our own consumption. Every planter ought to, and may feed all his animals, slaves included, for seven months of the year with them, as their culture begins when we lay aside our grass, or at a time during rain, when it is improper to use the hoe, and it is a crop, the production of which is proportionate to the quantity of manure, more than the labor bestowed, which is inconsiderable.

Some may say, they have not time to examine chemically the properties of their land, and if they had they do not know how.—We have much more time than we will allow, if not wasted; and may soon gain all the knowledge required;—a little attention will afford both. How would it appear in a merchant to say, he had not time to examine the soundness of a vessel he was loading for a long voyage, or of a traveller to examine his carriage and horses. If a failure arose, would we not say he deserved it? So with the planter who commits his seed to the ground without examining its adaptation; with this difference, that he is sure of a failure, the others may escape. The science of chemistry has done much, and will do more in enlightening us respecting manure; but if a planter tells me that he has put twenty cart-loads of well littered stable ma-

nure, fifteen of pond earth, one of wood ashes, and one of lime, into a heap, and made a regular mixture of it, which applied to five acres of corn produced him double what he made the year before from it, I would follow his example without knowing whether the nitrogen or carbon prevailed; though a knowledge of that science might explain to me, that it would have been better to have made a different proportion of the ingredients. Another instance is charcoal, which I did not enumerate among the manures within our reach, and of which few of us cannot command as much as we want, as every species of wood may be reduced to it. I saw a corn-field on my own plantation a few days since, undulated by its having been burnt there not long since, wherever the bed was, being more than twice the height of that in the space between. Now, we are indebted to chemistry for the discovery, that from its great porosity it absorbs a large quantity of the gases beneficial to plants, and lets them out whenever moistened, as they may require; but once the fact is known, we can all avail ourselves of it, without knowing the exact process. It is a very agreeable study, particularly so to the agriculturist, and I would advise all my friends to dedicate some time to it; but it is not absolutely essential.

We have recently heard a great deal said of the immense production of the Western country, where hogs are sold at $12 per dozen, and the small ones, including all under two hundred weight thrown in. Now, if we had also heard, that we could procure there an appetite to eat ten times as much as here, and a means of digesting it when eaten, I would grant the full force of the inference from that information; but if we can make here with more attention, as much as nature requires, and every variety which caprice renders agreeable, why not exert ourselves, and enjoy the society of our friends at home, without undergoing the discomfort of removal and inconvenience of new settlements.

But a re-action is already taking place, and let us hail the auspicious tidings with acclamation. A particular friend of mine who has been for years buying corn for the use of his plantation, will sell this year more than double what he has hitherto bought in any one season, and I hope we shall all see the advantages of the example and follow it. Now, my friends, if we will only introduce a little more system in our operations, and a great deal more exer-

tion in making manure and applying it to our crops, with a determination to go forward, and never use a hoe when a plough can work with more facility; I think we might make St. Andrew's a very agreeable residence, when we can entertain our friends with all the hospitality characteristic of South-Carolina, without any compunctious feelings of infringing upon the rigid rules of prudence. The field, the garden, the pasture, the dairy, are open to our choice, with a market for every production, and with the advantage of being within an easy ride from the city, during the season we are obliged to be there, and have time to see after and over all that requires our inspection, without infringing upon our hours of rest or sociality.

Our anniversary will take place in April, when I hope we shall hear that experiments are in operation to prove how much of any grain we can make to the acre, how much of any root, and how much of both, as our seasons will admit of a crop of both being planted within the year. Oats and sweet potatoes, the Rohan potato, corn, barley, peas, and many others, may be planted to advantage in one season on the same land, and above all, hay may be made to follow either. Oh! how it grates my feelings to see the quantity of that article imported from the north, and sent to the interior of our State, even to Columbia, when we have such bodies of fine meadow land lying waste for the want of the little culture that it requires to make from them that indispensable article.

I look forward with aspirations to Heaven, that I might live to see the time, when we shall feed most plenteously, every thing within our own plantations, with the productions of them alone.—We then, and not till then, may say, that we are FREE AND INDEPENDENT.

AN INQUIRY INTO THE NATURE AND BENEFITS OF AN AGRICULTURAL SURVEY OF THE STATE OF SOUTH-CAROLINA.

BY JOHN BACHMAN.

This is the title to a very interesting pamphlet, just published by the reverend author, who announces the object of its publication, in a brief Introduction in which he states, that it was the Question for discussion before a Literary Club, of which he is a member—"*What benefits may be derived from an Agricultural Survey of the State.*" The leisure of a rainy day, enabled him to collect his

thoughts on the subject, and commit them, in part, to paper. The Essay, thus hastily prepared, was read ; and the Club at a subsequent meeting, requested it for publication ; which the author complied with, at the earnest solicitations of his literary associates and friends, the Hon. D. E. HUGER and the Hon. M. KING.

We learn, it has been generally distributed, to His Excellency, the Governor, and the Members of the Senate and House of Representatives, and to other distinguished persons.

We shall insert a part only, in our present Number, and hope to conclude it in our next.

THE Legislature of our State has recently made an appropriation for an Agricultural Survey, and the question is naturally suggested what benefits are likely to result from this liberality of our State in fostering our Agricultural interests.

Within the last few years surveys have either been made, or are in a state of preparation in no less than twenty States, and some of the Territories. Some are on a limited scale, and are only confined to Agriculture, whilst others are more extensive. Some States include Geology and Mineralogy in their Agricultural Surveys—some, in addition to the above, have appointed naturalists of known talents to give descriptions of every native production of the State in every branch of Zoology, whilst one State, that of New-York, has ordered not only detailed descriptions, but expensive engravings.

It would be well in the introduction of this subject, to consider not only the relative terms, but the object of these surveys. Geology, in a strict sense of the word, is the science which illustrates the structure, relative position, and mode of formation, of the different organic, metallic, mineral, and other substances, that com pose the crust of the earth. Without touching on that branch of the subject which relates to the various theories of the earth, which have in many instances given rise to a tissue of extravagant notions—the Legislatures of our different States seem to have wisely directed the researches of their scientific men to an examination of those products of nature which are within the reach of our observation, and may be applied to practical purposes, being more intent on collecting valuable information, than in an indulgence of speculations, or the invention of theories. As yet we know but little in regard to the means which nature emplyos to form the very soil on which we tread, by converting into mould the various animal and vegetable exuviæ. We are just beginning to learn how scanty are the genuine observations we possess on the process of alluvial deposits, or on the depositions at the foot of mountains by means of the decomposition of the various rocks. We know but little of the process in producing petrefactions; and the world has only just commenced to apply to agricultural purposes the various mineral, as well as vegetable repositories.

An Agricultural Survey comprehends an examination of the various soils, so as to enable the cultivator to ascertain what plants are best suited to each plantation or district—what ingredients are wanting in the soil to render it productive, and to offer suggestions for its improvement. This requires the skill and the practice of an able chemist, possessing also an acquaintance with the laws of vegetable physiology, and a fund of practical agricultural knowledge.

It embraces an examination of the various localities where manures may be obtained, together with directions for their judicious application. It points out the errors in the mode of cultivation, and suggests such new improvements as have undergone the test of experiment. It is intended to direct the planter to such new objects of culture as may be safely introduced, when others have been found unprofitable—it extends to agricultural statistics, and to the management of animals in domestic use—in a word, it includes every department of agriculture.

A knowledge of several branches of Natural History, is more or less intimately connected with agricultural improvements. The localities of plants indicate peculiar soils—the ranges of quadrupeds, and the migration of birds, afford us lessons in regard to temperature, nearly equal to those of the thermometer, and the study of the habits of insects, which are either a pest, or a blessing to the farmer, is of very great importance.

In some of the districts in several of the States, great benefits have accrued from these Geological and Agricultural Surveys. In a few instances new localities of metalic deposits have been found, whilst in others various mineral manures, limestone, gypsum, marl, &c., have been detected, which have converted whole districts into fertility. In addition to these, other discoveries have been made—such as valuable clays, building stones, marble, materials for cements and localities, where by boring, springs of wholesome water have been conducted to the surface. On the whole, however, I am inclined to think that the mass of the community in the greater number of the States, has been somewhat disappointed in the results of these Geological, Agricultural and Zoological Surveys. Too much no doubt was anticipated—men hoped that veins of gold would be found running under the surface of their farms, and that the quantity of silver which should be detected among the rocks, would facilitate the great desideratum in our country—a specie currency. The farmer expected to be taught by the chemist how to double the product of his fields, without any additional labor. These results did not generally follow, and men had no right to anticipate them. There can be no doubt, likewise, that in an undertaking so new to our country, some mistakes have been made in the selection of the individuals, who carried on these surveys Some of them having been incompetent to the task assigned them, and others having performed it carelessly, and more from a desire of obtaining

the pecuniary appropriations of the State, than that of adding to its resources, or of advancing their reputations among men of science. The reports on the surveys of the different States, are now slowly and irregularly coming before the public. In general, they are characterised by those defects, which are incident to a new and difficult undertaking. Whilst some are very creditable to their authors, others afford abundant proofs of carelessness, haste, and a want of knowledge.

In the State of Massachusetts, not only an Agricultural, but a Geological and Zoological Survey, was ordered. The report on Agriculture, by the Rev. Mr. Coleman, is of very high merit. In the Zoological department, some information is given by Harris on Insects, that may be beneficial to agriculture, and some additions made to Ichthyology by Dr. Storer, that may aid the cause of natural science; on the whole, however, the papers on Zoology betray evidences of imperfection and haste. Still, as some of these branches are but distantly connected with agriculture, and the works have been got up without much expense to the State, if they confer no extensive benefits on science, they can do it no harm. In the State of New-York, however, the Legislature proceeded on a more magnificent and expensive scale.—In 1836, an act was passed, which was amended in 1840 and '42, ordering a survey of the State. Various distinguished individuals were appointed to give detailed descriptions of all the natural productions of the State, in the departments of Zoology, Botany, Mineralogy, Geology and Palænontology. These were to be accompanied with expensive engravings. To what number of volumes the result of these labors will be swelled, we are not yet informed, or what will be the expense when completed, it is difficult to conjecture,—only one volume having as yet appeared. In 1842, however, the State had already appropriated $130,000 to this object. There appears on the whole, to have been a State pride in this lavish expenditure, not very creditable to the wisdom of the Legislators of the Empire State, which may eventually produce a reaction, and finally, occasion more injury than benefit, both to the cause of science and agriculture. It may reasonably be asked, what benefit can be conferred on a State, by a publication of descriptions of well known Birds and Quadrupeds, not a single species being peculiar to the State, whilst the great majority have a range of several thousand miles, especially when they are well described and better figured by others, and when no new information can be imparted, and no evidence can be exhibited of any improvements in art. I am not aware, that in the most important branch, —an Agricultural Survey, any thing was ordered to be done at the expense of the State, and no examination was instituted of the Insects, that are either a blessing or an injury to the farmer. An examination of the minerals and organic remains was important, as the various localities of the State, had not before been scientifical-

ly, explored, and although no new discoveries of coal and other objects of anticipated wealth were made, it was well to ascertain that none existed. A simple list of the plants and their localities, and of the Mammalia and Birds of the State, indicating those which were resident or migratory, injurious or serviceable to the husbandman, with reference for descriptions to standard works, seems to be all that the wants of the State and science required. I allude to these facts, in order that our own Legislators, in the important work we have undertaken, may be guarded against lavish expenditures on secondary objects.

I come now to notice the recent appropriation by our Legislature, for the survey of our State. In the present case, it cannot be said that the State has been hurried into the measure, as it has been proposed, I think, by every Governor, and agitated in both Houses of the Legislature for the last five years. The appropriation also involves but a moderate share of expense, and is limited to a single object—an Agricultural Survey.

There can be no person of education and practical knowledge, who has had an opportunity of witnessing the improvements in agriculture, in Europe and our Northern States, who must not be decidedly favorable to the introduction of science into our system of agriculture, nor have we any room to doubt, that when this is fully understood, and carried into practical effect in our State, the product of our soil will be vastly increased—our country will be rendered more healthy, and our improvements in agriculture will advance manufactures and the mechanic arts; the number of inhabitants will be greatly multiplied, and a greater degree of intelligence as well as prosperity will be the inevitable consequence.

In England, Belgium, and some parts of France and Germany, agriculture is now pursued on scientific principles; and the preparatory study for the occupation of a successful farmer is the work of years. There are, however, advantages in all those countries possessed by the cultivators of the soil, that enable them to introduce science into their modes of cultivation, which are not enjoyed by the farmers of our Northern States, and only in a limited degree by our planters of the South. The European farmers, are either wealthy land owners, or rent large and extensive tracts of land, amounting in most cases to many hundred, and frequently to several thousand acres. The peasantry are in their employ—under their direction, and are obliged to adopt the modes of culture determined on by those who employ them. In the Northern United States, the farms are small compared to our Southern plantations, or to the extensive domains of an English nobleman. Our American farmers not only superintend the concerns of their farms, but generally labor in the fields. Hence every small farm has its own system of agriculture, according to the knowledge or caprice of its owner, and except in a few cases, science has lent but a feeble aid to agriculture. In the Southern States, although

our plantations are much larger, and our operatives under the control of the master, yet we labor under many disadvantages, owing to our climate, and more especially to our great deficiency in agricultural knowledge. Whereas, in the European kingdoms, I have mentioned, the soils of each district, and frequently of each farm, have been thoroughly analyzed—and the intelligent farmer is fully acquainted with the kind of cultivation best adapted to his lands. He has been taught, by a system of underdraining how to diminish a redundancy of moisture; and by irriga tion, how to render an arid soil fertile. Science teaches him how to apply manures to correct a superabundance of clay—how to use the various formations of lime, and when and where to withhold them; and he is guided by the lights of science and experience, in the selection of those manures best adapted to the roots and plants he is desirous of cultivating. For the last half century at least, this system of agriculture, on scientific principles, has been maturing in the minds of the Europeans. Manures have been dug from the bowels of the earth—gathered from the sea, and imported by ship-loads from the battle-fields, and other depositories contained in foreign lands. The Physiology of plants has been carefully studied, and every year is adding to their knowledge in this important branch. An acquaintance with the laws of Chemistry has become more general. Botany is no longer regarded as a merely amusing, but a practical and beneficial science. Their knowledge of Ornithology teaches them to know what birds should be preserved to aid them in diminishing the number of depradating insects; and Entomology, one of the most important, but most neglected branches of science, has been so far studied, as to enable them to guard, in a great measure, against the depredation of insects which infest their grains, fruits and trees. In these various departments, the conquests of science have been such, that the cultivation of the soil on scientific principles, and the study of natural science, as a part of the system, is no longer viewed as a doubtful experiment; on the contrary he who rejects these lights of science, is regarded by the most intelligent, and most successful cultivators of the soil, as half a century behind the knowledge of his fellow men in this age of improvement.

In our own country, few farmers have adopted those modes of culture, which the experience and science of Europeans have discovered to be most productive, and the planters of the South are in this particular behind the farmers of the North. Cotton and rice, the rich staples of our State, have so far banished other cultures, that we have now to import the corn we use in Charleston from North-Carolina, Maryland, and Virginia—our flour from the Middle States—our hay from New-York and New-England—our butter, cheese, and Irish potatoes, from the same prolific source; and our horses, beeves, and hogs, from Kentucky and Tennessee.

Hundreds of thousands of acres of our former inland rice-fields, are now wholly abandoned, and have become the habitation of the frog and the alligator. The soil in many of our districts has been exhausted by bad cultivation—as is the case in some parts of St. Paul's, St. Andrew's, Christ Church, and other parishes. Many of their former inhabitants have gone to Alabama and the West, where by a similar system, they have in many cases been equally unsuccessful, and some of them, or their sons, have, after years of absence and deprivation, returned to become overseers over the lands they once owned; like Ruth, to take the gleanings of fields once their own; may they prove as fortunate and as deserving. Our mountains abound with metalic wealth, but, until recently, the iron of the plough-share that turned up the soil, resting on beds of the finest iron ore in the world, was imported from the North, and the iron bars of our Rail-Road came from Liverpool. Marl exists in hundreds of localities in our lower country; and lime-stone in our mountains, and even in our middle districts, sufficient to enrich the soil to the end of time—our rivers and our sea-shore abound with ingredients of inestimable value to the planter, but we have not availed ourselves of these rich manures which nature has so bountifully provided. The Hessian fly and the chinch-bug destroy our wheat—the weavil our corn and rice—the army worm, the rot and the rust, our cotton—the sawyer our pines, and the curculio, the coccus and aphis, our fruits—so that we lose one half of the products of our fields, gardens and forests; and yet there is scarcely a man in our Southern States that is acquainted with the habits and character of a single one of the species of these depredators; and of course till its habits and modes of propagation are known, it will be impossible to suggest an antidote.

From this admitted defect in our knowledge of agriculture, the important question arises, how can the evil in question be best remedied, and in what way may an Agricultural Survey be rendered beneficial, under present circumstances? No one acquainted with the subject, can deny the benefits which would result from a survey, conducted on scientific principles, provided it can be rendered available to practical utility.

There are, however, immense difficulties in the way of success; these should be candidly stated, in order that they may be met and overcome. If the survey is to be conducted on purely scientific principles, founded on a careful analysis of soils, and a thorough knowledge of vegetable physiology, it is to be feared, that the individual suitably qualified to perform this complicated and arduous task, cannot be found in the country—and even should we be successful in obtaining such a person, the agricultural knowledge in the community, is not sufficiently advanced to enable our cultivators to be acquainted with the mode of applying the results to practical purposes. Besides, if the whole work is left to a single individual, unaided by Agricultural Societies, and men of science,

he would not be able to survey the whole State, during the term of a long life. The survey of a single county of England required, in some instances, four years, aided by Agricultural Societies, as well as the intelligence, advice, and personal aid of nearly every landholder in the county. Different individuals employed in these surveys, arrived at different chemical results. Errors were corrected but slowly—new tests were resorted to—new surveys made, and the subjects were discussed from week to week, for a succession of years. There is another subject which we ought not to overlook. The chemical analysis of the soil is one thing—the application of the knowledge thus derived, to the plain purposes of agriculture, is another. The chemist may be correct in his statements of the various ingredients in the soil submitted to his examination; but he must be either acquainted, with the practical operations of these results to the purposes of agriculture, or the agriculturists to which he submits them, must have sufficient knowledge of chemistry and vegetable physiology, to carry them into successful operation. Let us take for instance, the able scientific analysis of the soils made by Professor Shepard, from eight localities of a plantation on Edisto Island, and let us inquire how many planters can be found in South-Carolina, who have a sufficient knowledge of agricultural chemistry, to be guided by that analysis, in ascertaining what ingredients are wanting to render these soils more fertile, or what causes have been operating in producing sterility? Even the admirable report which accompanies it, (see Southern Cabinet, 1840, p. 449,) drawn up with great care and research, by a committee of intelligent practical planters, although it contains much valuable information in regard to various manures, does not afford us those plain and practical instructions, which the unskilled planter is so desirous of possessing.

The difficulties moreover, which attend the proces in making such an analysis of the soil, as will be available to practical purposes, are greater than the practised chemist is willing to admit. Sir Humphrey Davy believed that "neither much time, or a minute knowledge of general chemistry, were necessary for pursuing experiments on the nature of soils and properties of manures." To him, who was thoroughly acquainted with the subject, the work was simple enough; but to men who know nothing, even of the first principles of the science, there are difficulties which are for a long time insuperable. Even Davy, Lavosier, Chaptal, Decandole, Liebig, Dana, Coleman and Jackson, the lights of the world in the science of agricultural chemistry, have often differed, not only in regard to their experiments, but in their practical application. It is to be greatly feared, that our planters have not received that preparatory education, which would enable them to derive immediate benefit from a purely scientific survey. In England, Agricultural Societies and agricultural education preceded these sur-

veys by half a century. This was in a great measure the case in the Northern States of our own country. It has been observed, that when this deficiency existed among the people, they derived no immediate benefits from these lights of science; but in those counties, where men had been long trained in these preparatory schools of agriculture, they immediately profited by those aids which science presented. It is to be feared, moreover, that sectional jealousies and dissatisfaction may arise, from the fact, that the agricultural Surveyor does not possess the power of ubiquity, and is obliged to confine himself, for a considerable time, to one portion of the State, in order to render his labors of any value.—In this stage of our progress, should the overwrought anticipations in regard to the great advantages of such a survey result in disappointment, a reaction might be produced and cause a delay beyond the proper time; for although such a scientific survey of the State, may perhaps, at present, be rather premature, yet it would in a few years hence, when the public mind has become sufficiently enlightened, be productive of immense advantage.

Fortunately these difficulties, which are here presented, in order that they may be guarded against, are not insuperable.

Much will depend, on the individual to whom this important work shall be entrusted. In his selection, all party feeling and personal attachments should be disregarded.* He should not only be a man of science, but of practical experience in agriculture. He should be satisfied with our peculiar institutions, and have some knowledge of the culture of the staple articles of our State, as well as of those productions which are essential to our food, and furnish pastures for our cattle. He must be a man of an enlarged mind, and if possible, free from those strong prejudices which so often prove a barrier to the reception of truth. I have often met with managers of large estates of cotton or rice, who had been eminently successful in a mode of culture adapted to a particular region, and a particular plant—so wedded to the mode of cultivation they had adopted, that no arguments could convince them that a different plant—another locality and soil, required a very different treatment. An agricultural Surveyor should know enough of chemistry to enable him to analyze the soils—and be able to detect deposits of marl, limestone, and those other ingredients, which should be used as manures. In the present limited state of our agricultural knowledge, I would prefer a highly intelligent practical man to a purely scientific one, who is unskilled in the practical application of the laws of agricultural chemistry. He must, moreover, be a man of labor and patience, for he will have to experience some deprivations, and encounter a host of

* Since the above was written, we learn that Gov. Hammond has appointed Mr. Edmund Ruffin, the late Editor of the Farmer's Register, to conduct the Agricultural Survey of the State.—Ed. So. Ag.

difficulties. Such an individual might gradually prepare the way for a more thorough and scientific survey of the State. He might encourage, and give a proper direction to the labors of our Agricultural societies, and call forth latent talents in every part of the State. Some such unpretending practical examinations should be made of the agriculture of our various districts, as we have seen from time to time in the labors of Ruffin and Legare. The time may not yet have arrived, when we can be much benefited by such surveys as were made by Coleman, of Massachusetts, and Jackson, of New-Hampshire and Rhode-Island, unless they are rendered far more plain and practical than those contained in their scientific reports; but he may prepare the way, and give a new stimulus to agriculture. The result of his labors should be regularly published in so cheap a form, that they may find their way to every family in the State.

Much reliance must also be had on the public, in aid of this important undertaking. Men must not expect too much, or become impatient. A work has been commenced, which, to prove beneficial, must be continued for years. Sectional jealousies must be avoided, and we must regard ourselves as belonging to Carolina, rather than to one of its parishes. The minds of our planters must be more directed to those agricultural studies on which their prosperity so much depends, and being now about to engage a teacher, they must become industrious scholars.

I will now proceed to offer a few suggestions in regard to some of the means of instruction of which we might avail ourselves, in order that an improvement in our agriculture may be effected. These indeed should have preceded this Survey by many years, if it is to be conducted on really scientific principles, or may now be rendered important auxiliaries, if it is intended to be merely an examination of the products of, and modes of culture in the different districts of the State.

1st. I would suggest the establishment of Agricultural Societies in every district of our State, the fee of admission to membership should be so low, that not only planters, but overseers, and men in every walk and occupation of life, may be encouraged and induced to become members. These Societies should be active, and hold their meetings not once a year at a club-house, to eat a dinner and talk politics, but monthly or weekly, and interchange sentiments on the results of their several modes of agriculture. There will always be in every association of this kind a few men of education, who read the agricultural publications of the day, and who are possessed of sufficient zeal and industry, to submit to the test of practical experiment the information imparted by agricultural journals. If am asked, whether in order to carry on the process of cultivating the earth on the principles of science, I regard it as necessary that every planter should be a chemist and physiologist, and be at the same time acquainted with those branches of natural

history, Botany, Entomology, &c. which are so closely connected with it, in a word, whether every culturist must be a man of learning, and of science, I answer—unhesitatingly, No. As in government, a few leading men give a tone to the politics of a State—so in agriculture, the science and practical success of a few prominent planters in the State, will be a perpetual practical lesson to the districts around them, and men will adopt their practice without knowing much of the principles of science by which they have been governed. Man is an imitative animal, and is not slow in adopting the improvements of his neighbors, where he sees how much his own interest is concerned. When the celebrated Arthur Young, in 1767, commenced his valuable and well directed labors, and pointed out to his countrymen an improved mode of husbandry, they adopted his mode of culture although they only looked at the effects, and were unacquainted with the scientific views which had governed him in carrying on his successful experiments. It has been ascertained, that in those counties of England, where Agricultural Societies were first established, the products of the earth have been trebled within the last thirty years. The Highland Society, which has existed for sixty-four years—the most prominent, active, and most efficient in the world, whose meetings are held at Edinburgh—has, by the stimulus it gave to industry on the principles of science, rendered a once barren soil, in an inhospitable climate, equal in many of its counties, to the best portions of England itself. The Lothians are covered with the most luxuriant crops of wheat, barley, beans and other products. On the meadows, the most valuable grasses are cultivated ; the mountains, even to their very summits, are covered with rich pastures, and I observed herds of cattle and sheep grazing on the very top of Ben-Lomond, and other high peaks of that romantic land. All this I contend has been effected by a practical application of scientific knowledge, diffused by means of an Agricultural Society.

A fact or two in elucidation will be mentioned. Surveys were made in each county of Scotland, as well as of England—the soils were analyzed—the materials in each vicinity for manuring were examined, and a printed and detailed account was placed in the hands of every landholder, which would serve as a guide in the management of his farm. It is, moreover, not generally known that Scotland furnishes more than a fourth of Europe, and a portion of America, with genuine undegenerated seeds of many of the grains, melons, garden and flowering plants, that are usually cultivated. How is this effected? Botanists have discovered that a superior variety of seed immediately degenerates on being planted near those of other species or varieties of its own, or a kindred genus, and that on the second, or at farthest, the third year, the original and valuable character of the plant has, in a great measure, disappeared. Hence it is that in Carolina, when we plant our im-

ported cantelope melon seeds, in the vicinity of our common melons, squashes, &c., all their original, valuable properties disappear on the second year; so also, our cauliflower, becomes a mongrel cabbage, as I have ascertained; and I am inclined also to think, that the generally received opinion in Carolina, that all Indian corn, when planted near our sea-board, whatever may have been the original variety, is converted into what is called flint corn, by the peculiar character of our soil and climate, may be erroneous; and that this peculiarity may be traced to the near approximation of our abundantly prevailing fields of flint-corn, communicating their farina to the small patches of new varieties of corn, on which these experiments are making. But how is this evil remedied in Scotland, and why are the seeds of their grains and vegetables preserved without the slightest degeneracy from age to age? In raising seeds for planting, or exportation, no two varieties of the same species, or even genus, are suffered to grow within miles of each other, lest the winds might waft the fructifying farina of another plant, and produce degeneracy in any approved variety.

Some of the benefits then, which we would have every reason to anticipate from well conducted Agricultural Societies, would be the following:—

1. Such Societies would bring to a closer intercourse a few educated and scientific men, and a vast number of industrious practical agriculturists, who, by an interchange of their different modes of culture, would be equally benefited by the details of failures, as well as of successful experiments.

2. They would not long exist, before the members would be made sensible of the importance of analyzing the soils of their several districts, and thus ascertaining, whether there is a deficiency of those ingredients, which are necessary to the nourishment of the plants cultivated—what manures should be applied, and what modes of culture should be pursued.

3. They would be able to ascertain the causes which have converted the once fertile plantations of Carolina into old fields, grown up with broom-grass, and no longer yielding sustenance to man or beast;—they would learn the importance of a rotation of crops, as it is now well ascertained, that different plants not only feed on different substances contained in the soil, but that there are peculiar exuviæ from each, which would be injurious, were the same plant reared on the soil for a succession of years, but would be a source of nourishment to plants of a different genus.

4. They would be able by this increased intercourse and knowledge of culture, not only to augment the quantity of the staples now in cultivation, but introduce other valuable products, to which our soil and climate are well adapted.

5. They could scarcely fail to direct their attention to the introduction of some of those grasses, which would answer as substitutes for the herd's-grass and clover of the North, which do not

succeed in our Southern climate, except in particular soils and situations. The introduction into Carolina of a perennial grass, suited to pasturage and hay, would confer a greater benefit on the State, than the discovery of the richest gold mine.

6. By this additional stimulus to industry, and by the better draining and cultivation of our land, not only the wealth, but the health of the country would be improved. I could not fail to be forcibly struck with a remark made by Liebig in his Agricultural Chemistry, although I am aware that physicians have adopted contrary opinions in regard to this theory: "Plants (says he) improve the air by the removal of carbonic acid, and by the renewal of oxygen, which is immediately applied to the use of man and animals. Vegetable culture heightens the healthy state of a country, and a previously healthy country would be rendered quite uninhabitable by the cessation of all cultivation." The truth of Liebig's remark is verified by the increased unhealthines of our Southern country, since our own water-courses have been obstructed by decayed vegetable matter, and our fields suffered to remain uncultivated. Sixty years ago, the planters did not find it necessary to remove from their plantations on account of any apprehensions from fever, and many of our oldest inhabitants still living, were born and reared in situations, where there would now be imminent danger in remaining only a single night, during summer; and the question is of momentous importance, what process would render our climate of Carolina more healthy than it is at present. We may learn something on this head by looking at the effects of cultivation in other countries. The boggy fens of England were once the fruitful sources of fever. They have been drained—the peat moss has been converted into fuel—the lands are cultivated in grain—the peasant's cottage now stands on its borders, and he enjoys uninterrupted health. The time was, when the pontine marshes were traversed, even in the day time, at the risk of life; we are informed, that those portions which are drained, embanked and cultivated, are now comparatively healthy. The low grounds of Holland and Belgium, were once as sickly as Carolina is at present; in the autumn, 1838, I slept several nights in their vicinity, and I was informed, that since they cultivated their grounds more carefully, their former fevers had disappeared. The sluggish waters were still in their dykes, but decayed vegetation was no longer steeped in them —every foot of land was cultivated—the borders of their ditches were planted with nursling trees, which were to become the future pride of their forests; and the cabbage and cauliflower plants, along the public highway, nearly touched the wheels of our carriage. Thus, the plants inhaled the unhealthy carbonic acid gas, renewed the oxygen, and the improvements in agriculture, rendered countries healthy, that had formerly been very sickly.

The IId. auxiliary to our improvements in agriculture, I would suggest, is *cheap* and widely circulated *Agricultural Papers.*—

This is a subject so self-evident, that it is unnecessary to offer any remarks on its importance. Agricultural Societies, without a publication of their transactions, would be as inefficient as a rail-road without a locomotive.

IIId. I would above all, recommend a *School*, where those branches are especially taught, which appertain to Agricultural and Horticultural pursuits. Schools of this class, first had their origin, I think, in Germany; they were next introduced into France and Switzerland, and are now springing up in every part of Europe.—The Rensselaer School near Albany, in New-York, is also an agricultural one. The most complete Institution of this kind, I had an opportunity of examining, is called the Institute of Agriculture and Forestery, at Hohenheim near Stutgard. I observe that it is characterised in the British Farmer's Magazine, as "the most complete Agricultural School in Europe." Here, in addition to all the studies usually pursued in academies, all the operations of agriculture and horticulture, are performed by the Students in the open air, under the supervision of Teachers, qualified to undertake, note down, and record every observable fact, and traceable cause. Here, are delivered regular courses of lectures on Geology—Mineralogy and Chemistry—on soils, water, moisture, vapour, fermentation, gases, their extraction, mutual attraction, condensation and results. Instructions are given, and elucidated by experiments, on light, heat, electricity, galvanism, magnetism, &c.—These are all employed by Nature, and are in incessant operation. They constitute the class of great natural agents. Botany, in the most comprehensive sense of the term, forms a very important feature, which extends to the physiology of plants, their uses—medical and other virtues. Entomology is also taught as a science, connected with agriculture; and the habits of Insects, as well as Birds and Quadrupeds, are studied, in order to guard against their depredations, or be benefited by their labors.

The establishment of an *Agricultural School* on a model, of which the above is a faint outline, which may be modified in some particulars to adapt itself to the wants of our country, I most certainly believe, to be of greater importance to our agricultural interests than even an Agricultural and Geological Survey—than Agricultural Societies, or Agricultural Papers, inasmuch, as such a school would inevitably lead the way to all these other aids to our knowledge and success.

I will not venture on the details necessary to the establishment, support and successful operation of such a school. I will leave to politicians the settlement of the disputed point, whether the State has, or has not, the constitutional right to expend some of its funds in promoting our agricultural interests, as well as the aids it now affords to our College and our Military School. Suitable Professors may be obtained, although perhaps at present with some difficulty. The expenses would be less than those of a Military School.

If the State cannot be induced to lend its aid in such an undertaking, it may be worthy of inquiry, whether united individual effort might not be made available. In a short time the School, under judicious management, would support itself. The term for those who had previously received a good English education should be about two, at farthest, three years. Our planters, I should suppose, would prefer having their sons educated in such a seminary, after suitable instructions in some of our grammar Schools, to that of sending them to our Northern Colleges, or even to West Point. However highly I estimate the value of the higher branches of mathematics, and the modern languages taught in the latter, I cannot conceive that even such a School will confer half the benefit on our country, as would inevitably be derived from a well regulated Agricultural School on the principles of science. Fifty young men thus educated, would disseminate a knowledge of the science of agriculture, which would give a stimulus, and serve as guides to the whole State.

I am fully aware of the objections which many successful planters urge against the scientific cultivator. He is regarded as a theorist and a speculator, and it is predicted that he will eventually be unsuccessful. It is admitted that a man may have very correct ideas of agriculture, and yet, if he does not carry his knowledge into practice by constant attention to his planting interests, all his scientific knowledge will be unavailing. On the other hand, he who has become successful as a self-taught planter, might have reached this eminence many years earlier, and promoted his pecuniary interest to a much greater degree, had he possessed the benefit of previous knowledge. All self-taught men who have risen to any high degree of eminence, have subsequently lamented the disadvantages under which they had labored, owing to the want of previous education. What would we think of a lawyer, a physician, a merchant, or a mechanic, who would attempt to exercise his profession, without having made himself acquainted with any of those previous studies, which the world regards as essential to his success, in the profession he has chosen? At present, our young planters are engaged for years in their professions, before they have learned, even the first principles of agriculture, and they acquire a knowledge of planting, more frequently from their past failures, than by accidental instances of success.

I contend, that nearly every improvement in agriculture, as as well as nearly every discovery of importance to mankind, has been the result, not of the accidental discoveries of the ignorant, but of a previous knowledge of some of the sciences, guiding these gifted and studious men onwards, in their researches after truth. If Newton derived his first idea of gravitation from from the fall of an apple, it required such a mind as that of Newton, to make the practical application. The cook has seen the steam, issuing from the spout of the tea-kettle, from early times, but such minds as those

of Watt and Fulton, were requisite to apply this knowledge to any available purpose. Every school-boy can fly a kite, but it required the scientific knowledge of a Franklin, to render it the medium of conducting to earth, the disarmed lightnings of heaven. The labors of such men as Sir Humphrey Davy, Arthur Young, Lavosier and Liebig, have done a thousand fold more for the comfort and happiness of Europe, than all the Legislators, that thundered in their Senates, or all the Heroes, whose names are enrolled on the pages of history, and whose monuments fill the niches of Westminster Abbey, or adorn the romantic grounds of Père le Chaise. And when the political excitements in our country shall have happily subsided, such names as those of Judge Buel, Skinner, Ruffin and Seabrook, will be held in grateful remembrance, whilst those of our noisy political patriots, will only be handed down to posterity, through the musty streams of a forgotten newspaper.

I will here enter a little into detail, on the nature of those studies which should be pursued in an Agricultural School, and on their beneficial results.

1. The first and most important is, *Chemistry*—a branch of physical science, which analyzes and investigates the composition of inanimate bodies. This claims our special attention, not only on account of the manner, but the variety of ways by which it may be applied. Soils, we know, must differ widely in their various component parts, since even, in one part of the same field, the product is double to that of another part. A field may be admirably adapted to one kind of culture, which would produce but a scanty crop of another kind. Now, this deficiency in the latter case, arises from the fact, that the soil is wanting in some element, necessary to the growth of the plant, or possesses some ingredient which is positively injurious. In order to correct this defect in the soil, the culturist must first be convinced, that the evil in question, is occasioned by some deleterious substance, or by the absence of some necessary one. How can he ascertain the fact? Soils are so blended that we cannot be aided in the investigation by the examination of our senses, without chemical tests. Sir Humphry Davy in his Agricultural Chemistry, mentions the following fact which is in point:—"A soil of good apparent texture, from Lincolnshire, was put into my hands by Sir Joseph Banks, as remarkable for sterility. On examining it, I found it contained sulphate of the oxide of iron, and I offered the obvious remedy of a top-dressing of lime, which converts the sulphate into a manure." Here was a soil, the causes of whose sterility could not be conjectured, even by so close an observer, as the eminent Naturalist Banks; yet, by the application of chemical tests, the whole mystery was solved, probably in a few moments. It is a well known fact, that whilst the farms on Charleston Neck are admirably adapted to the culture of the Irish potato, turnips, carrots, and the whole cabbage tribe, they will scarcely produce the sweet potato of large size. There must

then be, some deficiency in the soil necessary to the production of this vegetable, which a chemical analysis, both of the soil, and the potato itself, would no doubt point out. A planter of this vicinity, desirous of improving his lands on which he was planting a crop of corn two years ago, placed in each hill a quantity of fresh bog earth, from an adjoining old and abandoned rice-field. This was immediately covered in with the grains of corn. It produced scarcely seven bushels to the acre, and he came to the conclusion that swamp mud was rather an injury, than a benefit to the corn. He was unacquainted with chemistry, and had no great regard for the opinions of scientific men as guides to agriculture. It was suggested to him that he had applied to his plants, that which in its then state was poisonous, and was advised to open the hills—to expose the still undecayed mass of swamp mud to the operation of air, light and atmospheric electricity, and replant on the following spring in the same hills, and with the same manure, which would then have undergone chemical action, and be in a fit state to afford sustenance to the plants. This, after necessary ploughing, was somewhat reluctantly done. In this second experiment he was more successful, having made thirty bushels to the acre, instead of seven, the product of the former year. Manures which are beneficial to some kinds of land, will be positively injurious to others. Putrescent vegetable matter, salt and various alkalies, are used as manures; and yet, some lands will be benefited by the one, and would be rendered less productive, were the other applied. The same may be said in regard to plants. A familiar instance may be mentioned. The rich soil which would cause the geranium to flourish in our flower-pots, would, were it applied to our japonicas, azelias, and rhododendrons, cause them to deteriorate, and finally to perish. Hence, the importance of chemical, as well as physiological knowledge, in enabling us to analyze the character of our different soils, and ascertaining their adaptation to the various plants and grains we are desirous of cultivating.

(To be continued.)

For the Southern Agriculturist.

THE ADVANTAGES OF AN AGRICULTURAL JOURNAL.

Beaufort, S. C. January 17, 1843.

Mr. Editor,—In common with many of your subscribers, I am gratified that the "*Southern Agriculturist*" has been continued for another year, and I at the same time hope, that the appeal made by its proprietor to the planters generally, may be liberally answered, in the shape of subscriptions punctually paid, and original articles freely supplied.

It is to our reproach, that a Journal, so exclusively devoted to the advancement of agriculture in the Southern States, should depend for so much of its reading matter, upon *selections* made from the pages of similar periodicals, in the more distant sections of the Union. But when planters will not take the trouble of answering questions, proposed with the view of eliciting information, need we be surprised at their unwillingness to write,unasked ? This neglect I have experienced myself, Mr. Editor, having once, through the medium of your pages, propounded a few interrogatories on *plantation economies*; but to this day, although twelve calendar months or more, have gone by, I have never been complimented with a reply. We could learn much *at home*, if we would only think so. And if our experienced and intelligent planters would occasionally make record of a few of the things they have *found out*, they would be "doing the State some service."

It takes a long time, in making experiments, to make discoveries, and after they are made, a longer yet, before we have confidence in them. Is it not then, vastly to our advantage, to take the results for granted, without the tedious test of experiment on our part, when they come to us certified, by *well known* and *successful* cultivators ?

But a prejudice exists among us, against learning any thing from Periodicals devoted to Agriculture. As well might we object to all books, because some of them lead us wrong, as to discard the useful knowledge in Agricultural Works, because occasionally, some theorist, who writes better than he plants, indulges us with some of his refinements on the art of planting.

In conclusiou, Mr. Editor, I must claim a little more of your patience, and room in your pages, for a few lines, extracted from an address before the Agricultural Society of Essex, Massachusetts, and which I look upon as very applicable to the present subject.

"Book farming. Do *the words* produce a sneer? Be that as it may, the *thing*, or what is often stigmatized as *that thing*, is not contemptible. For what is it? Not an attempt to comply with the advice, and copy the example of every one who furnishes an article for an agricultnral journal; not the adoption of every method of husbandry that is recommended in print; not a departure from all the usages of our fathers and neighbors; not a preference

of the theories contained in books to the results of experience.—No. I pity the stupidity of the man who thinks that if we use books, we must close our eyes against the light that is beaming upon us from other sources; or that we must become mere theorizers, and the victims of ruinous experiments. What! does a man lose his common sense, his prudence and his judgment, whenever he takes up an agricultural paper, or opens a book upon husbandry? Cannot one make himself acquainted with the doings of others without losing his power to judge whether it would be well for him, in his circumstances, to copy their examples? Our brains are not so weak as this. The knowledge acquired from books does us not make us all mad. But if it did, there would be more zest and true enjoyment in the learned madman's course, than in that of him who has learned nought, and who thinks that books cannot make him wiser. I ask what book-farming is? Common book-farming is learning by means of books, new facts, opinions, results of experiments, modes of operation, and the using such parts of the information as can be turned to profitable account in our individual situations. If this be folly, we are content to be called fools. An agricultural paper will be worth to you every month, if not every week, more than its annual cost." S. I.

For the Southern Agriculturist.

ON THE CULTURE OF COTTON.

Prince Williams' Parish, 1842.

Dear Sir,—Yours of the 19th inst., came duly to hand, and as I am a little at leisure, I propose to answer your several queries in detail.

Cotton Culture.—I prepare the land, with the exception of small bottoms, entirely with the plough, by throwing up a bed, say four furrows, then open with a narrow plough or bull-tongue, and sow the seed in the trench without covering, about four bushels per acre, commencing the first day of March, and continue planting from time to time, until the 15th of May, as will best suit the land. Fresh lands, where the plant will continue to grow all the season

should be planted early; worn lands which have not been rested, late in April, such as will rust and shed, in May. After the 10th April, however, sow less seed per acre and cover. The distance of the beds, from centre, to centre depend on the land; good land, say four feet; ordinary, distance three feet eight inches. I have planted three feet six inches, but find it less convenient to work. The early sowing will begin to come up in about fifteen or twenty days, after which hoe the top of the bed. This working will destroy the early grass, promote the health of the plants which are up, and be the means of many others coming up.

During this partial working, one acre and a quarter is a light task per day. Some seasons I have given two workings in this way, before I commenced with the plough, which usually is about four or six days after hoeing, turning the soil from the young plants. In some six days, the hoe follows the plough, simply hoeing the bed, turning the hoe obliquely, so that one corner will be in the furrow, and the other corner near the cotton plants, cutting the bed nearly at right angles; or in other words, make the bed as narrow on the top as the cotton will allow, and as broad at the base as the plough left it, the young grass falling into the furrow made by the plough.

In six or eight days, the plough returns and covers the cut grass and replaces all the necessary earth to the plants; for fresh heavy earth is quite injurious to the young plants. The hoe returns in about the same time, and hoe the bed, one acre per day to the laborer. If the cotton is quite thick and healthy, each hand may commence thinning, and continue to keep the plants out of their own way, until you get the desired stand.

On counting a row 105 feet long, where the cotton locks in a four-feet row, I find 87 stalks; in smaller cotton the same distance, 107 stalks; in a three-feet, eight-inch row, 135 stalks; smaller cotton, same distance, 186 stalks.

This varies much, but perhaps not more than the soil requires. In the above way, continue to work, running but two furrows in each row, alternately, to and from the cotton, until the last of May, or first of June; at which time plough out the alleys; continuing to plough and hoe as above directed, only it will require more furrows in ploughing the alley entirely out.

From the middle of June, care should be taken not to plough down so much of the bed as you may have done in the previous workings.

From the last of July, to the 15th of August, the ploughing must be light, turning the earth to the bed, for regular and late workings are nearly certain to produce a good crop; and I am inclined to the opinion, that skilfully stirring the fibrous roots, promotes a fresh growth of them, which gives the latter fruit.

You will perceive from the above mode of culture, that the workings are frequent. I think, however, it may stand two weeks without injury. Late planting I commence working with the plough, turning the earth from the young plants, it requires working and thinning earlier, and in quick succession, much in the same way; and you may quit working it in its turn. Usually I plant ten acres to the hoe; potatoes and other incidental work included. The above remarks are intended to apply to the middle country, for you are apprized that the Saltketcher soil is light and generous.

Respectfully, yours, W. W.

Communicated and corrected for the Southern Agriculturist.

RECENT AND EXTENSIVE MARLING IN SOUTH-CAROLINA.

Columbia, S. C. Nov. 30, 1842.

Dear Sir,—It affords me great pleasure to comply with your request, to furnish you with a statement of my marling operations during the past year, and the result of them so far as it has been ascertained.

I commenced in November last to marl my plantation at Silver Bluff, on Savannah River. There is no marl on the place. I procured it from Shell Bluff on the same river, and had to boat it 12 miles up the stream. It requires eleven prime hands to man the boat I use, and when the river is not too high they make two trips a week, loading and unloading themselves. They bring about 1100 bushels at a load. The marl is landed at a spot below high water mark, and during the whole crop season two other hands and two carts are constantly engaged in hauling it to a place of security on the top of the bluff. At other times it is hauled directly from the landing to the fields. There are however 13 hands and two mules lost to the crop. My boat, which is a common pole boat, was built chiefly by my own people, and cost me about $600, including their labor. There have been incidental expenses

to the amount of about $200 this year. During the year ending on the 8th November, there were 85 trips made and about 93,000 bushels brought up. I think I can safely calculate on bringing up 100,000 bushels per annum hereafter, with the same force. I mention these facts, that every one may form his own estimate of the cost of procuring marl under similar circumstances. My calculation is that it costs me about two cents a bushel, delivered on my bluff. To one having marl on his own premises, nearly the whole of this expense would be saved. I am enabled, by omitting to open new land, to haul out and spread this marl, without interfering with other plantation work, or lessening the number of acres planted per hand. In hauling out, I have not been able to do as much as they do in Virginia. Mr. Ruffin, the author of the marling system, hauled 24 loads of 5¾ bushels with each cart per day, a distance of 847 yards; I have done but little over half as well. I use mules however, and my land being level, carried 6¼ bushels at a load. I found the mules could not stand trotting back with the empty cart. The marl weighs about 105 lbs. per bushel. My land was laid off in squares, so many to an acre, and a load dropped in each square. It was spread by hand; each negro taking his square, and carrying his marl on a board or in a small tray. A prime fellow can spread an acre in a day. But it is a hard task, and counting the gang round I have not averaged over half an acre for each worker The marl spreads best when damp. It will then yield to the hand, and lumps are in general easily crushed.

Shell Bluff is a bold cliff on Savannah river, over 200 feet high, and in some places more than 100 feet perpendicular. Professor Vanuxem, who examined it some years ago, (See Farmers' Register, vol. vii. p. 70, and also vol. x. p. 487) discovered 14 varieties of marl, varying in quality from 37.2 to 93.4 per cent. of carbonate of lime. In using the marl, I have excluded the inferior as much as possible, and have not found the very best in any great quantity. I tested the quantity of carbonate of lime in one specimen taken at random from each boat load brought up this summer, and found the average of 34 loads to be 62.8 per cent. varying from 51 to 77. In every specimen there was a small proportion of oxide of iron, and clay and sand, usually in about equal quantities. There were, no doubt, other component parts which I did not ascertain; but I satisfied myself that there way neither gypsum nor magnesia The marl presents various appearances, being in color, white brown, olive, yellow, and violet, and in consistency from sand to soft stone. Some of it appears to be a concretion of shells, from a size scarcely visible to the naked eye, to an inch in diameter. There is no hard limestone, and it is doubtful whether any of the marl here will make lime, though it is an excellent cement. Much of that which I have used has been cut from the face of the cliff with pick-axes. It falls down sometimes in fine grains, sometimes in masses. At

every handling it breaks up finer, and exposure to the air assists disintegration. I do not burn or pound it, or use any preparation whatever, but spread it as I get it. Where it was spread last winter, an observer would readily discover it, and lumps as large as an egg, and occasionally much larger, are to be seen. A mere passer by, however, would not notice that the land had been marled. At every working it is more and more mixed with the soil. But I imagine it will be several years before it is completely combined with it, and until then the full effect of the marl cannot be known. A difference was apparent in this crop between the effects of that spread early in February, and that spread in the latter part of April.

By the 22d of April last, I had marled 175 acres, at the rate of 200 bushels to the acre. Of these I planted 50 acres in corn on the 17th of March, 50 acres in cotton on the 10th April, and 75 acres in cotton on the 22d April. These three cuts are in the same field, and adjoining, being separated only by turn-rows, yet the soils vary considerably.

In the corn, I laid off 4 separate acres along the turn-row, as nearly equal in quality as possible. The one supposed to be the best was left without marl. The others were marled with one, two and three hundred bushels respectively. It was all of the same boat load, and contained 54 per cent. of carbonate of lime. This land has been in cultivation more than one hundred years. I have planted it myself 11 of the last 12 years, and sowed it in oats the other year. I have given it three light coats of manure, the last in 1839. It is a light, gray, sandy soil, of which the following was the analysis before marling, viz.

Water lost at 300° - - -	2 per cent.
Vegetable matter, - - -	3
Silica, - - - - -	80
Alumina, - - - -	11
Oxide of iron, - - - -	2
Loss, - - - - -	2
	——100

This cut was in cotton last year, and my expectation was that with common seasons it would produce 12 bushels of corn per acre. And had I not kept the unmarled acre as a test, I should have set down all over that quantity to the credit of the marl. The corn came up badly, and suffered by the birds. The four experimental acres were cultivated precisely as the rest of the cut, and were distinguished only by the posts which marked the corners of each acre. From the first however, the marled corn exhibited a different appearance. It was stouter and of a much deeper color. As the season advanced, the difference became greater. The marled corn was as dark a green as swamp corn usually is. The

fodder was pulled on the 3d of August, and after hanging two days and a half on the stalk in dry and rather windy weather, weighed as follows :—

		Increase.	Per cent.
Unmarled acre,	250 lbs.		
Marled, at 100 bushels,	285 "	35 lbs.	14
" 200 "	314 "	64 "	25.6
" 300 "	261 "	11 "	4.4

The corn was gathered on the 24th of October, being thoroughly dry, and having shrunk as much as it would in the field. There appeared to be little or no difference in point of soundness. It was shucked clean and measured in a barrel. The unmarled corn shelled out two quarts less to the barrel than the marled. The following was the result:—

		Increase.	Per cent.
Unmarled acre,	17 bushels.		
Marled, at 100 bushels,	21 "	4	23.5
" 200 "	21 "	4	23.5
" 300 "	18½ "	1½	8.8

From this it would appear that 100 bushels of marl was as efficacious as 200, and perhaps in such land as this, such may be the fact. It appears also probable, that 300 bushels to the acre, is too much. I ought however, to state that this last acre had a slight sink in the centre, and that the slopes around it are much thinner than the average land. These constitute about one-fifth of the acre, and were evidently injured by the marl. It was a bad selection for the heaviest marling; but at the time it was made, I did not suppose, judging by the rates at which they marled in Virginia, that 300 bushels would injure any land, My fear now is, that 200 bushels may prove too much for soil like this; and I have accordingly determined to put only 150 bushels on the acre hereafter, until I see its further effects. This has been a remarkably productive season for corn. I think the unmarled acre in this cut, made at least five bushels more than it would have done of an average year. I presume the marled acres have done so likewise. But whether it would be fair to attribute any of the four bushels increase, to the peculiartity of the season operating on the marl, I am wholly unable to decide. Supposing the increase from the season to be the same on the marled and unmarled land, and deducting five bushels from the produce of each acre, there will be 33⅓ per cent. in favor of the two best marled acres. This however, is all conjecture. The average per acre of this whole cut was 18 bushels. The measurement of all but the experimental acres, was made however by wagon loads, according to the usual plantation estimate, in which there is liberal allowance for shrinking, &c. Had the whole been measured in the same manner as the experimental acres were, the produce would have appeared greater. I

have had this cut planted in corn once before, but having been absent the whole year, no account of it was preserved, and I do not know what it produced.

I selected also and laid off separately four acres of cotton along the turn-row of the 75 acre cut of cotton. At the time I thought them nearly equal in quality, and the one supposed to be the best of these was left unmarled, and 1, 2, and 300 bushels of marl spread upon the other three. It turned out however, that the acre with 100 bushels of marl was inferior to the average of that cut, and that with the 200 bushels about equal to it, while the other two were far superior. I was deceived by the stalks grown the year before. The two first named acres being somewhat rolling, and the year a wet one, they produced as good cotton as the other two which were flat. The unmarled acre was not much if any superior to the one marled with 300 bushels, save that there was a spot where fodder stacks had stood in 1838-9, which produced nearly double the cotton of any other spot of the same size in either acre, and added probably 30 lbs. to the amount gathered from that acre. The marl on these acres contained, like that on the corn cut, an average of 54 per cent. of carbonate of lime. This land is of the kind commonly known as *mulatto* soil, and was cleared at least as early as the corn cut. It was certainly planted by the Indians in 1740. The following was the analysis of it before marling, for which, as well as for the analysis of the corn cut, I am indebted to the kindness of Prof. Ellet:

Water at 300° - - -	3
Vegetable matter - - -	4.5
Silica - - - -	74
Alumina - - - -	14.5
Oxide of iron - - -	4
	——100

This cut was not planted until the 22d of April, because it could not be marled before. A dry spell occuring immediately after, at the end of two weeks very little cotton had come up except in the unmarled acre in which there was about half a stand. My overseer becoming alarmed in my absence replanted the whole, and threw out the old seed wherever it had not come up. This was done on the 6th May, so that the crop of this cut dates from that period, which is at least a month later then I could have preferred. For my experience is that early cotton, like early corn, is almost always the best. I consider the two weeks start which one half the unmarled acre obtained in this instance as of considerable consequence to it. These early stalks could be distinguished until the bolls began to open. The difference between the marled and the unmarled cotton was obvious as it was in the corn. The leaf too appeared broader and the stalk stouter from the first. The folowing was the production of these four acres. I state the production

of all, though that of the 1 and 200 bushels acres ought not to be compared with that of the other two, on account of the relative inferiority of the soil.

The unmarled acre,	-	-	-	1111	lbs. in the seed.
Marled do. at 100 bushels,	-	-		846	" "
" " at 200 "	-	-	-	1003	" "
" " at 300 "	-	-	-	1318	" "

The difference between the unmarled acre and that with 300 bushels of marl was 17.7 per cent. in favor of the latter. It would have been greater prehaps any other year than this, which has been almost as favorable for cotton as corn. The average production of the whole 75 acres was 966 lbs. per acre. I have had this cut in cotton 10 of the last twelve years; in corn 1, and the following is statement of its production of cotton for 6 of the 10 years; that of the other years not having been preserved.

1833	average pr.	acre	in seed	731	lbs. manured lightly.
1834	"	"	"	784	"
1835	"	"	"	980	" manured lightly.
1836	"	"	"	957	"
1840	"	"	"	497	"
1841	"	"	"	500	" manured.
1842	"	"	"	966	" marled.

The other 50 acre cut of marled land was planted in cotton on the 10th of April. It came up in good time and was a fine stand. This is also a light gray soil, with less clay than the mulatto land, and less sand than the corn cut. It is probably as old as either, and has been cultivated in much the same way. Although planted 10 days later than some other fields, and after all of them except the 75 acre cut, it soon appeared to be the oldest cotton, and certainly matured the earliest of any. Immediately after the cold weather, about the 1st of August, the rust commenced in it, and by the 20th of that month it had the appearance of a field after frost. Forms, small bolls, and even the leaves dropped. Most persons who saw it thought it had been cut off one half. I think myself it suffered to the extent of one fourth at least. But I have made on this cut this year 840 lbs. of seed cotton, which is nearly 50 per cent more than I ever made on it before. The following is the average of its production for 4 other years.

1833	average pr.	acre	in seed	569	lbs. manured.
1834	"	"	"	435	"
1840	"	"	"	368	"
1841	"	"	"	566	" manured lightly.
1842	"	"	"	840	" marled.

I think the injury from the rust nearly or quite equal to the benefit derived from the favorable season. And that the increase

from the marl was greater on this cut than any other, because the earliest marled and most seasonably planted. The rust here was more injurious than in any other field, and I might attributed it to the marl, but that the 75 acre cut also marled suffered least of all. I am inclined to think that the most advanced cotton was most affected, and the youngest least; and that marl had no influence one way or the other. It is worthy of remark, that while all my other cotton suffered from lice and the worm both, neither made their apperance on the marled land.

I have troubled you with this lengthly detail of my operation, because this being the first serious experiment with marl in South-Carolina (that I know of) it may be interesting to those who have this earth within their reach, to know the particulars. From the facts I have stated, each one can form his opinion on nearly as good data as I can my own. I can only add that my expectations for the first year have fully answered. I did not calculate on any of those magical results which agricultural experimenters so often look for, and so seldom realize to the full extent. I regard an increass of 20 per cent. as a very hansome return, and if it only does as well another year, I shall at all events be repaid for my labor even if the beneficial effects of the marl ceases then. But the experience of all who have used it is, that it continues to improve the soil every year, until thoroughly disintegrated and combined with it; and that with proper culture it never declines from its maximum. Under these circumstances, and with these hopes, I shall continue myself to prosecute the business vigorously during the summer. I have hauled marl over 160 acres, and have now at my landing enough to cover 300 acres more. My great regret is that I did not engage in it sooner. I have long known Shell Bluff, and for some years had heard of Mr. Ruffin's successful introduction of marl into the culture of Virginia. But I had not read his 'Essay on Calcareous Manures,' nor examined Shell Bluff, until the summer of 1841. The idea of obtaining marl from that spot was first suggested to me by my friend Maj. Dickenson, of Georgia; and after a careful perusal of Mr. Ruffin's Essay, and an analysis of the varieties of marl there, I determined to try the experiment. I have during the course of it received much encouragement and valuble practical information from Mr. Ruffin himself, to whom in common with all other beneficiaries of this inestimable treasure, I owe a debt of gratitude which cannot be easily cancelled. I am, my dear sir,

With great regard and esteem,
Your obedient servant,

J. H. HAMMOND.

HON. WHITEMARSH B. SEABROOK,
President of the State Agricultural Society.

MISCELLANEOUS.

RIDGE *versus* FLAT DRILL.

To the Editor of the Doncaster Gazette:

Having heard various discussions on the relative merits of ridging and flat drilling white turnips, I resolved this year to bring the matter to the proof, by trying the experiment in two or three fields. I tried in one instance flat drilling on land which had laid a fortnight, against ridging and drilling on fresh mould; the flat 16 inches apart; the drilled or ridged 27 in. apart. They were both carefully hoed and singled; but the flats yellowed very early and stopped growing; whilst the ridged luxuriated in their ample space, and grew to an uncommon size: the difference in the weight of crop per acre is to the amount of some tons. Adjoining these I ploughed down manure, and drilled on the flat, but they scarcely did better than the other, though they had all the same top-dressing; whilst the ridged ones, immediately contiguous, with the same quantity of manure, did excedingly well. A few further observations I made on these experiments may not be without interest; we took a few loads of dung, or rather litter, fresh from the fold, the exact soil that modern science so greatly approves, but the turnips rejected the new fashioned views, and grew both sulkily and tardily; indeed the difference was astonishing between this and Christmas-led, and once-turned manure. In the same field some were not rolled some done with a wooden roller, and some with a heavy stone one, across. The effect on the turnips was slight, but on the weeds important: for, just according to the weight of the roller, had the weeds been repressed in their growth.

Should these observations be worthy a place in the Gazette, you will, by their insertion, greatly oblige yours, &c.

AN ISLONIAN.

P. S.—I venture an assumption for the purpose of eliciting remarks from some of your numerous readers, that fold manure acquires more vegetative qualities during the process of fermentation than it loses by the escape of ammonia.

A NEW PRINCIPLE IN HORTICULTURE.

Mr. H. M. Bidwell, of this city, has just sent us an elegant cabbage head from his garden, illustrative of a new principle in that important vegetable, accidentally discovered. About the middle of June, having some last year's stumps, which had been set out for salad sprouts' he broke off three, about 3 or 4 inches long, and stuck them into the ground. They took root readily, and grew thrifty as any other plant. Two of the three have produced fine solid heads. The one before us measures two feet six inches in circumference, with the open, outside leaves all stripped off. It is of the drum head

shape. The other head is more conical, and apparently a different species. Plants may thus be obtained early, without the labor and attention required for raising them in hot-beds The principle is worthy of notice. [*Conn. Farmer's Gazette.*

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GRAPE VINE CUTTINGS.

Translations from the German for the New Genesee Farmer.

M. Frischer, the superintendent of the gardens of the Duke of Weimar, employs with success, the following method of propagating the more choice varieties of wine and table grapes, by means of cuttings. He selects from among the stalks and branches cut away in fall and spring pruning, such as are of suitable diameter—say from $\frac{3}{8}$ to $\frac{1}{2}$ inch,—and have well ripened wood. These he cuts in pieces midway between the buds, and splits each piece lengthwise, preserving the bud uninjured. The halves containing the buds are then placed with the flat side on a bed of well prepared garden mould, gently pressed down level with the surface, and covered with moss, or a layer of fine leaf mould. Thus planted, the cutting speedily strike root, if the bed be kept moist by occasional waterings, and properly shaded, without obstructing the circulation of the air.

Cuttings similarly prepared, though not split, readily strike root and produce vigorous plants, if their ends be diped in melted sealing-wax, and they being planted in good garden soil, covering them into the depth of half an inch. The ground must be kept moist, and free from weeds. [*Con. Farmer's Gazette.*]

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GRAFTING.

M. Schroer recommends using a branch of common willow, an inch or two in diameter, in the following manner as a matrix for receving the grafts of such varieties of apple, pear or quince trees, as it desirable to multiply. Make longitudinal cuts or slits *through* the branch, at equal distance of 15 or 18 inches. Take grafts having two perfects buds, give the lower end the usual wedge-shape, using a keen knife, and insert them in the slit of the willow, making the lower buds sit close to the slit. Then bury the branch in a trench formed in good garden soil of such depth as will permit the upper buds to protrude just above the surface of the ground, when the trench is agained filled. The ground must be watered occasionally if the season be dry, and the weeds must be carefully extirpated whenever they appear. In the spring of the following year, the branch may be taken up and cut in pieces, leaving a small portion to each of the growing grafts—which are to be replanted in a nursery. The willow does not form a permanent union with the grafts; but merely supplies nutriment till the proper fibrous roots are produced from the lower bud.

POTATOES.

M. Bellamy Aubert, of France, states, as the result of experiments continued during three seasons, that abundant crops of potatoes may be grown in poor clayey soils, by simply strewing the sets plentifully with rye-chaff previous to covering them with earth at planting.

Professor Voelker, of Erfwet, covers his potato sets with a lawyer of tanners' spent bark, two or three inches thick, before turning a furrow over them. He says he thus provides a loose spungy bed for the young tubers; prevents weeds from springing up and growing in immediate contact with the plants; and secures an abundant supply of moisture during the season, if but one soaking rain occur after planting—as the spent bark, covered by the surface soil, will retain water during the most protracted drought.

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FRUIT TREES.

Dr. Zimmerman, of Zinzow, alleges that the natural productiveness of fruit trees is injuriously affected by the practice of training standard trees high, or pruning off the lower side branches. This training is usually commenced in the nursery, and continued even after the tree is transplanted to its permanent position in the orchard—resulting in giving the tree a main stem of 6 or7 feet high. Dr. Zimmerman contends that trees of the same class or variety, thus treated, are never so productive as those which are suffered to assume a more natural form and developement; and he refers, in proof of his theory, to the fact that orchards belonging to persons who know little of the modern scientific refinements in horticulture, and whose trees are very scantily pruned, are invariably more productive than those whose owners keep them in regular subjection to the knife. Permitting trees to branch out lower, would perhaps involve a greater waste of ground, in orchards especially; but the increased productiveness of such trees, would, in the Doctor's opinion, abundantly compensate for this. Thre are moreover many plants which could be advantageously cultivated in the shade of such trees.

The truth probably, in this case also, lies between the two extremes—and possibly the whole matter may resolve itself into this, that the more horizontally the branches of fruit trees are trained or permitted to grow—which appears to be Nature's tendency—the more productive of fruit will the trees be. In training fruit trees against walls, it is known to be advantageous to give the limbs a descending curve. This effect will de naturally produced, if the trees be permitted to branch out nearer the surface of the ground than is customary. The limbs, in this case, assume a nearly horizontal direction, and are subsequently curved down by their own weight and that of the fruit they produce, and the result of the whole is, a greater tendency to the formation of fruit beds.

MADDER.

The proprietors of small farms in the Grand Dutchy of Baden, cultivate madder, of late years, with much success and profit. The plant requires a rich soil, free from weeds, and the roots yields a beautiful and durable red color only when it is permited to attain to perfect maturity in the soil—which is not till the close of the third year of its growth. Roots of one year's growth are indeed used in Avignon, but the dye prepared from them is not durable; and that from two year old roots is very little better. Good madder, yielding a rich and durable dye, can be prepared only from roots not less than three years old; and if two of the summers were very hot, the dye will be the brighter and more permanent. When it happens that the summers are unusually cool, the roots are not taken up till the close of the fourth season. Southern plants, acclimated and cultivated in northern latitudes, require great care and judgment in their treatment, to prevent deterioration; and the madder plant does not appear to be an exception.

TAR FOR WHEELS.

A friend informs us that the use of tar in the Eastern States for wagons and coaches is now, or soon will be entirely superseded by the introduction of hogs lard and wheat flour. To prepare the mixture, the lard must be melted over a gentle fire and flour stirred in until the lard becomes of the consistence of a paste. Our friend warrants us in advising farmers and wagoners to adopt the plan. He says they will never use tar afterwards.

EASY MODE OF CUTTING IRON.

The cutting of bars of irons or pipes with the chisel is a laborious and tardy process. By the following mode, the same end is attained more speedily, easily, and neatly:—Bring the iron to a white heat, and then, fixing it in a vice, apply the common saw, which, without being turned in the edge, or injured in any respect, will divide it as easy as if it were a carrot.

MONTHLY CALENDAR

OF

HORTICULTURE AND FLORICULTURE,

FOR FEBRUARY, 1843.

With a view of rendering our work useful to those who attend to that branch of the subject of Agriculture connected with Horticulture, we shall accompany each number with a detail of such vegetables proper to be cultivated for the month in which the number is issued, with some directions for their management.

We shall, at the same time, direct the attention of our readers to the care necessary in the management of their fruit trees, and last not least, our readers shall receive ample directions in the management and care of the Flower Garden, the various seeds necessary to be sown, and the several interesting flowers that bloom in each month, and such other information as may be calculated to render that healthy and interesting vocation peculiarly gratifying to the lovers of Flora. A highly valued friend to whose labors we are largely indebted, will extend his aid to us on this subject. We should be gratified to receive from other sources hints upon this branch, as much may be gained by the comparative views of those who are in the same pursuit, and the result of their experience will be particularly valuable to all who delight in the pleasures of gardening.

VEGETABLE GARDEN.

The early part of this month is favorable for sowing the several varieties of Peas. They are to be sown in open situations in drills, about four feet apart. and the seeds covered about three inches deep. Sow Early York, Sugar-Loaf and the larger kinds of Cabbage seed. If you have plants from seeds sown in October and November, let them now be set out in good ground two feet apart. Sow Cauliflower seed; they will produce the largest Cauliflowers, and will head earlier than those sown in the following October; although in many situations they do not survive the moisture and heat of the summer Sow Lettuce, Spinach, Carrot, Turnip, Beet, Parsnip, Radish, Onion and Leek seeds about the middle of this month. Plant out Irish Potatoes, and set out roots of Asparagus.

FRUIT GARDEN.

Plant Apple, Pear, Peach, Nectarine, Apricot and Fig Trees, especially the latter, as this is the only month in which the roots and cuttings of the Fig will succeed. Prune Vines and Orange trees—prune and dress your Strawberry, and Raspberry beds.

FLOWER DEPARTMENT.

Set out cuttings of Roses and all kinds of evergreens; plant cuttings of Geraniums. and nearly all the plants cultivated in the green-house; divide the roots of Pinks and Sweet Williams; plant also cuttings and pipings of the above. Sow all perennial and biennial seed—Stocks, Astors, and Polyanthus. Plant the root of Dahlias.

CHARLESTON, MARKET HALL, January 23, 1843.

Memorandum of Stock, &c. brought to Market during the week ending the 21st ult., viz: 193 Beeves, 35 Calves, 428 Hogs, 102 Sheep, and 27 wagons with Poultry, &c.

PRICES CURRENT THE PAST WEEK:

Beef, 5 a 8 cents per lb.; Veal, 8 a 10 do do.; Pork, 7 a 10 cents per lb; Mutton, 7 a 10 cents per lb.

ROBERT MACBETH, Clerk of Markets.

The market is well supplied with the following vegetables, and at very low rates:—Cauliflowers, Cabbages, several varieties; Turnips of several varieties; Carrots Spinach, Radishes, Celery, Lettuce, several varieties; Parsley, Cresses, Leeks, Skellions, Sage, Thyme; also Sweet Potatoes, Pumpkins. and Tanniers; and a plentiful supply of Northern Beets, Parsnips, Irish Potatoes, and Cabbages.

POUDRETTE.

The Subscriber having accepted the agency of the Poudrette Manufactory of New York, (conducted by D. K. Minor,) will receive orders for the same. The following are the present prices, viz. $3 per barrel, for ten or more barrels, or $5 for three barrels and less than ten—or $2 for single barrels. To these prices will be added the freight, wharfage and drayage here.

Terms, *cash on delivery.* JOHN D. LEGARE.

October 1, 1843.

Ploughs, Cultivators, Corn & Cob Crushers.

The Subscriber keeps constantly on hand, Ruggles, Nourse & Mason's PLOUGHS, which have taken numerous premiums at the North, and which has sold for the three last years, giving general satisfaction to every purchaser; they vary in price from $6 to $10, the first being a light one horse Plough, the last a four horse Plough. Also, Freborn Ploughs, from $3 25, upwards, according to the size. The Cultivators are of the best construction, and are now generally used in cultivating Corn at the North.

CORN & COB CRUSHERS, made by Mussey, Murray & Sinclair, with every kind of Implement necessary for the Field or Garden culture, consisting in part, of STRAW-CUTTERS, CORN SHELLERS, HOES, SPADES, SHOVELS, AXES, HATCHETS, DUNG FORKS and DRAGS, RUTTERS, CRADLES, &c., &c.

AND

An extensive assortment of *GARDEN and FIELD SEEDS*, which are warranted to be of the best varieties. Most of these are imported direct from Europe, by the Subscriber,

J. D. LEGARE,

October 22. *No. 61, East-Bay, Charleston.*

French Fruit Trees—Camillias, &c.

THE Subscriber has on hand an excellent assortment of FRUIT TREES, imported by him direct from Paris last Spring, and which he had planted out here. They consist of PEAR, APPLE, CHERRY, APRICOT, PLUM, Madeira NUT and JUJUBE TREES. Many of the Pears and Apples blossomed last Spring and some bore fruit. It is therefore presumed that a large number will do so the coming season. He also expects in the month of December a further supply of Fruit Trees, Roses &c from Paris.

He offers also, for sale, Peach, Nectarine & Apricot Trees of American growth; and will also receive orders which will be executed at 10 per cent. on cost and charges, for any description of Fruit Trees, Ornamental Shrubs, or Plants, from the Nurseries of *Sinclair & Corse, of Baltimore, Robert Buist, of Philadelphia*, or any of those in the neighbourhood of *Boston*.

The prices of the French Fruit Trees vary from $1 to 2, according to the size of the Trees. The American Trees are at from 37 to 75 cents.

Also, remaining from last year's Stock.

A few very fine variaties of CAMILLAS, AZALIAS and other Ornamental Green-house Plants, and a choice collection of ROSES, consisting of Tea, Bengal, Bourbon, Perpetual Damask, &c. He expects also, to receive a further supply of the above at the proper season.

J. D. LEGARE,

October 29 No. 61, East-Bay, Charleston.

AN ESSAY ON CAL

2d Edition. By Edmund

Feb. 4 A. E.

Mott's Combined

STOVE and

THIS article is a Boiler or Caldron, [illegible] constructed that the heat encircles the [illegible] ble, and can be removed from place to [illegible] require. They are adapted for all [illegible] No farmer or planter should be without [illegible] water for WARM BATHS.

They are made of the following sizes:—

15 gallons,	50 gallons	100 gallons
20 "	60 "	120 "
40 "	80 "	150 "

These Furnaces have many advantages over Caldrons set in the usual mode:

1. Being portable, they may be removed from place to place, as occasion or convenience may require.
2. Require only a few lengths of pipe to fit them for use.
3. The fire-place and flues are so well arranged that the consumption of fuel is less.
4. The Caldron can be lifted out and in, to make any examination, or to clean the flues, without the expense of re-setting.
5. They cost less, when the expense of laying bricks, lime, and the frequent re-setting are taken into account.

To set a Caldron with brick in the most approved mode, requires an experienced workman, who cannot be obtained at all times without great inconvenience.

J. D. LEGARE, 31, *East Bay, Charleston.*

BOOK & JOB PRINTING

AT THE

OLD STATE, NO. 4 BROAD-STREET.

MILLER & BROWNE,

RESPECTFULLY inform their friends and the public generally, that they execute all kinds of Plain, Ornamental, and Fancy Printing in the most [illegible] at short notice. They solicit the patronage of their friends.

They have just received a splendid assortment of COMBINATION BORDERS, for Cards, Fancy Store Bills, &c. which will be worked in the most fashionable and beautiful style.

January, 1842.